

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF TEXAS
TYLER DIVISION**

Cheetah Omni LLC,

Plaintiff,

vs.

Alcatel-Lucent USA Inc., et al.

Defendants.

HONORABLE LEONARD DAVIS

Case No. 6:11CV390

JURY TRIAL DEMANDED

**CHEETAH OMNI'S CLAIM CONSTRUCTION
REPLY BRIEF**

A. U.S. Patent No. 6,882,771**1. “multiple band [optical communication system]” (claim 15)**

The term “multiple band optical communication system” is used only the preamble of claim 15. Defendants argue that “one cannot understand” the phrase “a plurality of communication bands” in the claim body unless the preamble is limiting. (Opp. at 6.) But the phrase “a plurality of communication bands” uses “a” (not “the”) to describe the “plurality of communication bands,” meaning that the preamble is not an antecedent, and that phrase is readily comprehended.

Defendants assert the claimed amplifiers cannot all process the same band. (Opp. at 7.) But the claim says that the amplifiers need only process “one” band, and nothing prohibits them from all processing the same band. Moreover, the phrase “each operable to receive and amplify at least one of a plurality of communication bands” is not superfluous. That phrase requires that the amplifiers be capable of amplifying a “band,” not just a single wavelength.

Finally, focusing on, *MEMS Tech.*, a non-precedential Federal Circuit decision, Defendants argue that “multiple band” is “an important characteristic of the invention.” (Opp. at 7.) First, that is contrary to the Federal Circuit’s *en banc* holding that “although the specification often describes very specific embodiments of the invention, we have repeatedly warned against confining the claims to those embodiments.” *Phillips v. AWH Corp.*, 415 F.3d 1303, 1323 (Fed. Cir. 2005) (*en banc*). Second, the examples in the ‘771 patent are not limited to multi-band systems. Claim 15 is for a gain equalizer. The description of Fig. 14c – “an exemplary gain equalizer” – says it is “suitable for use in a single or multiple band communication system.” (Ex. 1 at 4:16-18, emphasis added.)

2. “the first part” (claims 8 and 15)

Defendants’ “undivided” argument is contrary to the plain claim language. Claim 8 expressly states, in a section Defendants ellipses-out, that the attenuators may receive only “*a portion of* the first part.” Thus, the plain language of the claim refutes Defendants’ argument.

The specification also supports Cheetah's construction. For example, in Fig. 16(d), attenuators¹ 1630b and 1640b receive only a portion of the "first part" because the two beam splitters in the middle of the figure split the "first part" further.

3. "[the gain equalizer operable to . . .] selectively introduce attenuation or gain into the at least one of the plurality of amplified wavelengths" (claim 15)

The word "selectively" means to choose the *amount* of attenuation (from 0% - 100%), or the *amount* of gain (from 0% - 100%). For example, Fig. 4 shows "a variable attenuator." (Ex. 1, '771 Patent at 3:28-29.) It does not select between attenuation and gain, as Defendants construction would require, it selects the *amount* of attenuation: "by controlling the amount of movement each mirror 230 and/or 240 experiences, the intensity or attenuation of output signal 272 can be regulated." (*Id.* at 12:41-44.) Fig. 4 is not an isolated example; it is the building block used to make the more complex embodiments. (*See id.* at 16:59-64, 24:41-46, 27:56-59.)

The cases Defendants cite cannot change the plain meaning of this limitation. "The construction that stays true to the claim language and most naturally aligns with the patent's description of the invention will be, in the end, the correct construction." *Renishaw PLC v. Marposs Societa' per Azioni*, 158 F.3d 1243, 1250 (Fed. Cir. 1998).

4. "displacing the movable mirror to cause a change in the amplitude of the output signal" (claim 8)

"the amplitude of the output signal varying depending on the displacement of the moveable mirror layer" (claim 15)

For the reasons explained in Cheetah's Opposition to Defendants' Motion for Summary Judgment of Indefiniteness, these limitations are not indefinite. Nor should they be construed under 35 U.S.C. § 112(f) because, as Defendants admit in their Indefiniteness Brief, "the claims recite some structure – a mirror – and thus should not be construed under part (f)." (Dkt. #205 at 14, n. 7, emphasis added.) Cheetah agrees.

¹ The specification explains that, to add a wavelength (for example), mirrors 1630b and 1640b attenuate optical signal 1674 to zero. (Ex. 1, '771 Patent at 38:13-25, 39:31-40.)

B. U.S. Patent No. 7,116,862**1. “the optical signal” (claims 1, 10, 13, 18)**

An “optical signal” has two key characteristics: it has wavelength(s) and it has amplitude (brightness). But the only characteristic relevant to this dispute is the wavelength characteristic. The claims expressly recite this characteristic of the “optical signal”: “the optical signal comprising a plurality of wavelengths.” (Claim 1, ll. 64-65; claim 13, ll. 66-67.)

The independent claims do not mention the amplitude of the optical signal until after the claim terms at issue² appear in the claims. In other words, a different section of the claims focuses on the optical signal’s amplitude – its amplitude is irrelevant before that point in the claims. Nonetheless, by adding the word “undivided,” Defendants seek to forbid amplitude changes in these early parts of the claims, a fundamental rewrite of the claims.

The specification supports Cheetah’s analysis. In every embodiment that shows a wavelength separator and beam splitter, the amplitude of the optical signal is irrelevant until the beam splitter stage. (*See* Figs. 10b, 12, 14c, 16d and accompanying text.) For example, in Fig. 12, amplifier 1822n amplifies the brightness of the optical signal coming from the light pipe 1820 before it reaches the “separator” 1824. Under Defendants’ proposed construction, that is improper. But noting in the claims as written precludes that amplification.

Defendants’ construction has at least one more flaw. Claims 13 and 18 do not mention a “light pipe,” but Defendants’ construction improperly adds that structure to those claims.

2. “the amplitude of the MEMS output signal capable of being [changed by moving the moveable mirror/varied depending on the movement of the moveable mirror]” (claims 1, 13, 18)

Cheetah’s reply for this term is identical to its reply for the similar terms recited in the ‘771 patent addressed above in Section A.4.

² “an optical signal separator operable to receive the optical signal communicated by the light pipe” (Claim 1); “separating the optical signal communicated for processing into at least a first portion of optical signal wavelengths and a second portion optical signal wavelengths” (Claim 13)

3. “the MEMS output signal” (claims 1, 13 and 18)

Cheetah opposed Defendants’ construction fearing that Defendants were attempting to limit the clause “the amplitude of the MEMS output signal capable of being varied depending on the movement of the moveable mirror.” But they do not do so. As Cheetah illustrated in its Opening Brief, the plain meaning of that clause is that the amplitude of the MEMS output signal is dependent on the movement of the MEMS mirrors, but that amplitude change need not appear at the MEMS mirrors – it can manifest itself at a later point. Defendants do not disagree. Accordingly, to eliminate unnecessary disputes, Cheetah accepts Defendants’ proposed construction of “the MEMS output signal” for purposes of this lawsuit.

4. “to communicate the optical signal to the MEMS device” (claim 10)

5. the “receive” limitations (claims 12, 17, 20)

Defendants assert that construction is required to “resolve[] the parties’ apparent dispute.” Cheetah does not know what the dispute is. Defendants asked for construction of these terms but fail to identify any real dispute. Their lack of supporting argument reveals that construction is unnecessary. These terms are clear on their face.

C. U.S. Patent No. 7,339,714

1. “unmodulated”/ “unmodulated optical signal” / “to modulate” / “modulated” / “modulation” (claims 1, 18)

Defendants have not sought a construction of “optical signal.” They know this Court construed that term as “light beam carrying information” in *Samsung* and they do not challenge that construction or address the *stare decisis* effect of this Court’s affirmed construction.

Defendants instead focus on the word “unmodulated.” But they do not – and cannot – explain how an “unmodulated optical signal” can be “a light beam that does not carry information” when “optical signal” indisputably means “light beam carrying information.”

Ignoring this fatal flaw, Defendants’ cite only *extrinsic* evidence, namely dictionary definitions and a different patent case having absolutely nothing to do with optical telecommunications technology. Defendants do not cite any *intrinsic* evidence to support their

constructions. This Court explained in *Samsung* that the intrinsic evidence requires the “unmodulated optical signal” to carry information. *Samsung*, 2009 WL 5196721 at *3.

Defendants are wrong when they say that this Court did not address the term “unmodulated” in *Samsung*. That word was a key part of Cheetah’s arguments in the district court and on appeal. Indeed, Cheetah made many of the same arguments Defendants now make, but both courts squarely rejected those arguments. Finally, nothing Defendants cite from Dr. Islam’s testimony is inconsistent with the Court’s construction.

2. “semiconductor substrates” (claims 1, 5, 18, 19)

As explained in Cheetah’s Opening Brief, Cheetah’s proposed construction is consistent with the disclosure of the ‘714 patent, whereas the Defendants’ proposed construction introduces new ambiguous concepts divorced from the ‘714 patent, such as “foundational material” and “resistivity between a metal and an insulator. Defendants reveal their true objective at the bottom of page 16, where they argue “one benefit of [Dr. Islam’s] invention is that ‘numerous blazed grating stages can be simultaneously formed on a single semiconductor substrate.’” (Emphasis added.) Defendants apparently intend to use the term “foundational material” to limit the claims to a single substrate even though the claims expressly say “the array of optical signal processing devices [are] located on one or more semiconductor substrates.” (Claim 1, ll. 28-29.) No construction is needed.

3. “at least some of the optical signal processing devices comprise . . . a plurality of at least partially reflective mirrors” (claims 1, 18) / “the array of optical signal processing devices . . . comprising a plurality of at least partially reflective mirrors” (claims 5, 19)

To reduce the number of claim construction disputes, Cheetah accepts Defendants’ proposed construction for purposes of this lawsuit.

4. “at least some of the mirrors are operable to undergo a partial rotation in response to the control signal” (claims 1, 18)

Although not the claim construction issue they originally raised, Defendants now argue that the phrase “a control signal” in the antecedent means “a single control signal,” contrary to the well-settled rule that “a” in a claim means “one or more.” *Baldwin Graphic Sys., Inc. v. Siebert, Inc.*, 512 F.3d 1338, 1342-43 (Fed. Cir. 2008). Defendants cite *method* claim 5 (not in dispute for this construction), which uses the phrase “one or more.” But that does not imply that “a control signal” in *apparatus* claims 1 and 18 is limited to a single signal. Defendants cite no legitimate basis for departing from the well-settled rule or from departing from the plain meaning of the words in the claim.

5. “receiving at least the portion of the first signal part at the an array of optical signal processing devices” (claim 5)

Defendants say they need their construction “merely to clarify.” (Opp. at 20.) Defendants identify no dispute between the parties other than a vague reference to Cheetah’s Infringement Contentions. The plain language of the claim is clear without adding the word “undivided,” which appears nowhere in the patent and which introduces ambiguity as to what an “undivided” signal is.

D. U.S. Patent Nos. 6,856,459 and 6,940,647

**1. “polarization controller” (‘459 claim 1)
“controlling the state of polarization” (‘459 claim 17)**

“polarization adjustment device” (‘647 claim 1)

In the ‘459 patent, Defendants’ construction adds limitations to the preambles that already exist in the claims, which creates redundancy and confusion. They argue, without support, that “without [preamble terms] ‘polarization controller’ or ‘controlling the state of polarization’ acting as limitations, it is not possible to determine the subject matter of claim 1” of the ‘459 patent. On the contrary, the subject matter of the claims is clear from the bodies of claims 1 and 17 – both claims repeatedly use the term “polarization” throughout their bodies.

The preamble terms “polarization controller” and “controlling the state of polarization” merely serve “as a convenient label for the invention as a whole.” *Storage Tech. Corp. v. Cisco Sys., Inc.*, 329 F.3d 823, 831 (Fed. Cir. 2003).

Defendants also load the phrase “any desired output state” into the preambles, alleging it is yet another “purpose” of the invention. They seek to rewrite the claims. Defendants crop the antecedent “a” from the phrase “a desired output state” recited in the body of claim 17 because it undermines their proposed construction of the preamble. The word “a” does not mean “any,” and it is improper to rewrite the claim.

Turning to the ‘647 patent, Defendants ask the Court to load “polarization adjustment device” with the same baggage. This phrase is in the body of the claim and the claim expressly defines, in detail, what elements comprise the “polarization adjustment device.” Defendants offer no legitimate reason for disregarding the express claim language.

2. “at least three stages of phase shifters each operable to introduce a phase shift between the first and second [principal modes] [modes of polarization]” (‘459 claim 1; ‘647 claim 1)

Contrary to Defendants’ assertion, Cheetah’s proposed constructions do not seek to eliminate the requirement that each stage must be capable of introducing a phase shift – Cheetah agrees that each stage must have that capability.

Defendants add a new word, “variable,” before the claim term “phase shift.” This is not claim construction, but an improper rewrite of the claims. As “support” for injecting this new word, Defendants cite a section of the file history directed to a different claim conveying a completely different concept, namely the amount of time it takes for a phase change to occur (“less than one mili-second”). In addition, that amendment had absolutely nothing to do with whether the claimed phase change was “variable.” (Defs’ Ex. 8 at PageID #3558.)

Cheetah’s “change in phase” language is not ambiguous in the context of claim 1. As shown by Defendants’ clarification of their proposed construction (Opp. at 24), their construction is ambiguous, unsupported, and more importantly, rewrites the claim to add a new limitation.

**3. “phase shift between the first and second principal modes”
/ “phase shift between the first and second modes of
polarization” (’459 claims 1, 17; ’647 claim 1)**

Given the clarification in Defendants’ Brief that their construction “does not exclude the situation where two modes of polarization travel ‘in phase,’” there is no substantive dispute between the parties as to the meaning of these terms. However, Cheetah’s construction is more straightforward and understandable whereas Defendants’ construction introduces the vague concept of a change of phase “difference.” Thus, Cheetah’s proposed construction should be adopted.

4. “beam splitter” (’459 claims 1, 17; ’647 claim 1)

The claims do not require “copies,” but Defendants want to rewrite the claims to add that word. The specification undermines Defendants’ effort. While the specification describes “50/50” type of beam splitter that “will generate two substantially identical copies,” the specification also describes “other types of beam splitters” that create “uneven distributions of intensities.” (’459, 9:33-37.) Clearly, the resulting signals for these “other” beam splitters are not true “copies” of one another.

There is also no disclosure in the specification to support Defendants’ additional requirement that the claimed beam splitter create two signals having “substantially equal quantities of wavelengths.” This is language Defendants lift from a definition of the term “copy” – a term that is not recited in the asserted claims.

Defendants criticize Cheetah’s construction by saying that Cheetah’s construction covers step 940 in Fig. 11, which they say is “*not* a ‘beam splitter.’” (Opp. at 25, emphasis in original.) Defendants misread the text accompanying Fig. 11. It says that devices that separate by wavelengths “may include, for example, [a] wavelength division demultiplexer.” (Ex. 5 at 33:1-2, emphasis added.) This language does not exclude beam splitters, contrary to Defendants’ argument. Moreover, Defendants presume, without evidence, that a beam splitter cannot split a beam by wavelength. The claim does not limit how the beam is split, nor should the Court’s construction.

Finally, Defendants mis-cite Dr. Islam's testimony. Regarding the first half of Defendants' construction ("a device that passes a first copy . . ."), Dr. Islam merely said that a "beam splitter may do this and then it gives examples,"³ contrary to Defendants' assertions. He never agreed that the text Defendants cite at col. 9, lines 18-21 defines all beam splitters. Defendants then parlay that mis-definition of "beam splitter" into the second half of their construction ("each copy of the optical signal having . . .").

5. "beam splitter that is shared" ('459 claims 1, 17; '647 claim 1)

As Cheetah explained in its Opening Brief, phase shift stages can be optically different even when they use the same physical components. Defendants do not dispute this fact and the patents expressly teach it. (Ex. 5 at 23:32-35.)

Defendants' construction adds an ambiguous phrase, "different phase shifter." Defendants show how they plan to use the ambiguity to manufacture a (non-existent) non-infringement defense. Defendants' "modified Fig. 7c" (Opp. at 28, right-hand drawing) contains a "beam splitter that is shared" (green) as that term is used in the patent, but Defendants claim it is not a shared beam splitter citing their construction.

Although Defendants' modified drawing has only one physical phase shifter, from the optical signal's perspective, there are two separate phase shifters. In the first phase shifter, the optical signal (655) travels upward and rightward toward the beam splitter (620) resulting in a first phase change. Then, the optical signal (673) travels away from the beam splitter downward and leftward resulting in a second phase change. Unquestionably, the two phase shifters share the beam splitter.

Defendants' proposed construction must be rejected because it would create confusion.

³ Defs' Ex. 1 at 217:3-4, emphasis added.

6. “partially transmitting mirror” (‘459 claims 1, 17; ‘647 claim 1)

Defendants argue – without evidentiary support – that some partially silvered mirrors and mirrors made from one or more layers of a dielectric coating are not partially transmitting mirrors, contrary to the patent specification and claims.

The intrinsic evidence refutes Defendants’ arguments. The claims say, “the second beam splitter that is shared comprises a partially transmitting mirror.” (Ex. 4 at 46:19-21.) The specification states that the shared beam splitter “may comprise a mirror having one or more layers of a dielectric coating.” (*Id.* at 9:24-25, emphasis added.) Dependent claim 16 of the ‘459 patent states, “the beam splitter that is shared is selected from the group consisting of a partially silvered mirror and a mirror having one or more layers of a dielectric coating.” (*Id.* at 47:34-37, emphasis added.)

Defendants also cannot defend their inclusion of the phrase “surface . . . not substantially reflective.” A surface that reflects 90% of the light, but passes 10% is “partially transmitting” under plain meaning of those words, but would be excluded (improperly) under Defendants’ construction.

E. CONCLUSION

For the reasons set forth above, Cheetah asks the Court to adopt its proposed constructions of the various claim terms.

Respectfully submitted,

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By: /s/ Thomas A. Lewry
Thomas A. Lewry (MI Bar No. P36399)
(Lead Attorney)
John S. Le Roy (MI Bar No. P61964)
Robert C.J. Tuttle (MI Bar No. P25222)
John M. Halan (MI Bar No. P37616)
John R. Buser (MI Bar No. P64758)
Christopher C. Smith (MI Bar No. P73936)
Brooks Kushman P.C.
1000 Town Center, 22nd Floor
Southfield, Michigan 48075-1238
Tel: (248) 358-4400 – Fax: (248) 358-3351
Email: tlewry@brookskushman.com
jleroy@brookskushman.com
rtuttle@brookskushman.com
jhalan@brookskushman.com
jbuser@brookskushman.com
csmith@brookskushman.com

T. John Ward, Jr. (TX State Bar No. 00794818)
Jack Wesley Hill
Ward & Smith Law Firm
111 W. Tyler St.
Longview, Texas 75601
Tel: (903) 757-6400 – Fax: (903) 757-2323
Email: jw@jwfirm.com
wh@jwfirm.com

Eric Miller Albritton
Albritton Law Firm
PO Box 2649
111 West Tyler, 75601
Longview, TX 75606
Tel: (903) 757-8449 – Fax: (903) 758-7397
ema@emafirm.com

CERTIFICATE OF SERVICE

The undersigned hereby certifies that all counsel of record who are deemed to have consented to electronic service are being served with a copy of this document via the Court's CM/ECF system per Local Rule CV-5(a)(3) this 1st day of February, 2013.

/s/ Thomas A. Lewry